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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,099	10/02/2003	Germano Rabach	003-090	8397
36844	7590	03/04/2005		
CERMAK & KENEALY LLP P.O. BOX 7518 ALEXANDRIA, VA 22307			EXAMINER HE, AMY	
			ART UNIT 2858	PAPER NUMBER

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

**Office Action Summary**

Application No.

10/676,099

Applicant(s)

RABACH ET AL.

Examiner

Amy He

Art Unit

2858

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 11-14, 16 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 11-14, 16 and 17 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/24/04</u>   | 6) <input type="checkbox"/> Other: ____                                     |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-10 and 15, drawn to a method of measuring partial discharges in windings of electrical devices, classified in class 324, subclass 772.
  - II. Claims 11-14 and 16-17, drawn to an electromagnetic sensor for measuring partial discharges in windings of electrical devices comprising an antenna comprising coaxial cable, classified in class 343, subclass 723.
2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the antenna comprising coaxial cable, which is useful as an electromagnetic sensor, can be used to practice another and materially different process, such as, a receiver for receiving signals.
3. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Cermak Adam on February 24, 2005, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-10 and 15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-14 and 16-17 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Drawings***

5. Figures 3-5 are objected to because the X-axis and Y-axis labels are missing. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiota (U. S. Patent No. 6, 114,871), in view of Dister (U. S. Patent No. 6, 035,265).

Referring to claims 1-2 and 4-5, Shiota discloses a method for measuring partial discharge in windings of electrical devices (in Figures 24-26(a)), the method comprising:

detecting partial discharge signals using a plurality of tuned VHF electromagnetic sensors (sensors 9a, 9b and 9c), being arranged at a plurality of freely chosen positions (see the different position of the partial discharge sensors 9a, 9b and 9c) close to the electrical device to determine the position of the discharge location (column 4, lines 64-65; column 33, lines 31-40; column 34, lines 41-42; column 38, line 53-column 39, line 9);

evaluating the detected sensor signals using electrical hardware, software, or both (the combination of partial discharge measuring circuit 53 and partial discharge generation processing circuit 26; or the combination of spectrum analyzer 52, filter circuits 23, partial discharge measuring circuit 53 and partial discharge generation processing circuit 26).

Still referring to claims 1-2 and 4-5, Shiota does not specifically disclose: applying voltages having high frequency components; applying a suitable surge test pulse; applying voltage comprises a high frequency AC/DC voltage; or applying a surge test voltage having a variable pulse, wherein the repetition rates are different from 50/60 HZ.

Dister (U. S. Patent No. 6, 035,265) discloses applying voltages having high frequency components; applying a suitable surge test pulse; applying voltage comprises a high frequency AC/DC voltage; or applying a surge test voltage having a variable pulse, wherein the repetition rates are different from 50/60 HZ (column 2, lines 50-60; column 11, lines 12-27; column 12, lines 15-20).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Shiota to incorporate the step of: applying voltages having high frequency components; applying a suitable surge test pulse; applying voltage comprises a high frequency AC/DC voltage; or applying a surge test voltage having a variable pulse, wherein the repetition rates are different from 50/60 HZ, as taught by Dister, since applying a high frequency surge test pulse to the winding to detect partial discharge is one of a normal way to locate the fault. In addition, by injecting a high frequency signal, the partial discharge measurement in Shiota can be measured without interfering with the lower frequency signals (see Dister column 11, lines 12-15).

Referring to claim 3, Shiota discloses a method for measuring partial discharges in windings of electrical devices according to claim 1, wherein the plurality of sensors comprises at least three sensors (9a, 9b and 9c).

Referring to claims 6-7, Shiota discloses a method for measuring partial discharges in windings of electrical devices according to claim 1, further comprising:

filtering the detected sensor signals by a conditioning circuit/ a software filter (the combination of spectrum analyzer 52 and filter circuits 23, or noise distinguishing circuit 25).

Referring to claim 15, Shiota discloses a software filter (the combination of spectrum analyzer 52 and filter circuits 23, or noise distinguishing circuit 25). Shiota does not specifically disclose a filter based on the Fast Fourier Transformation. Dister discloses analyzing using the conventional Fast Fourier Transformation (FFT, column 12, lines 19-20). A person of ordinary skill in the art would find it obvious at the time the invention was made to modify the software filter of Shiota to include filtering/analyzing using Fast Fourier Transformation, as taught by Dister, for the purpose of calculating impedance response for predicting winding failure (column 12, lines 19-20).

Referring to claim 8, Shiota discloses a method for measuring partial discharges in windings of electrical devices according to claim 1, further comprising:

quantitatively characterizing the discharge patterns using stochastic analysis (by using combination of spectrum analyzer 52, filter circuits 23, partial discharge measuring circuit 53 and partial discharge generation processing circuit 26).

Referring to claim 9, Shiota discloses a method for measuring partial discharges in windings of electrical devices according to claim 1, wherein the sensor is located near the coils (see coils as shown in Figure 24) connected to the high voltage source (connected through the high voltage buses 81a, 81b and 81c).

Referring to claim 10, Shiota discloses a method for measuring partial discharges in windings of electrical devices according to claim 1, wherein at least two high frequency sensors (9a-9c) are positioned near to the machine's high voltage terminal (high voltage buses 81a-81c) and to the low voltage terminal (ground in Figure 24), respectively, and further comprising:

rejecting noise using a differential measuring mode (using the noise elimination circuit, see claim 5).

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kaneda et al. (U. S. Patent No. 6, 452,416) discloses using antenna as a VHF electromagnetic sensor for detecting partial discharges in a rotating electric machine; separating noise from the detected partial discharge signals.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy He whose telephone number is (571) 272-2230. The examiner can normally be reached on 8:30am-5pm.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AH  
February 23, 2005.

V. Nguyen 3/01/2005

VINCENT Q. NGUYEN  
PRIMARY EXAMINER